WHAT IS CLAIMED IS:

DK 1/19/04

1. A ~~dialysis~~ hemodialysis catheter comprising:

a catheter body having a proximal portion, a distal portion, a first longitudinally extending central lumen configured to deliver blood, and at least three longitudinally extending lumens positioned radially of the first lumen, the at least three lumens configured to withdraw blood from a patient,

at least one blood delivery opening formed in the distal portion of the catheter body, the at least one blood delivery opening being in fluid communication with the first lumen and configured for passage of blood therethrough; and

at least three blood withdrawal openings formed in the outer wall of the catheter body, each of the blood withdrawal openings being in fluid communication with one of the at least three lumens and configured for passage of blood from a patient.

2. The catheter of claim 1, wherein the at least three blood withdrawal openings are spaced proximally of the at least one blood delivery opening.

3. The dialysis catheter of claim 1, wherein the first lumen is substantially rectangular in cross-section and each of the at least three longitudinally extending lumens is substantially oval-like in cross-section.

4. The dialysis catheter of claim 3, wherein the cross-sectional configuration of the first lumen and of the at least three longitudinally extending lumens each transitions to a substantially circular cross-section at a proximal portion.

5. The dialysis catheter of claim 2, further comprising a distal tip portion at the distal portion of the catheter body, the distal tip portion having a first stiffness greater than a second stiffness of an intermediate portion of the catheter body and being sufficiently rigid to dilate tissue as the catheter is inserted into a patient.

25. The catheter of claim 24, wherein the stiffening member has an abutment surface for abutting a surface formed internally in the distal tip portion of the catheter body to limit insertion of the stiffening member.

26. A system for placement of a dialysis catheter comprising a dilating trocar and a dialysis catheter, the system comprising:

a) a trocar having an elongated tubular portion and a lumen extending longitudinally through the tubular portion, the tubular portion terminating in a dilating tip configured to dilate tissue and create a subcutaneous tissue tunnel, the lumen of the trocar having a first internal diameter and configured to removably receive a guidewire therethrough for retrieval of the guidewire; and

b) a dialysis catheter having a first lumen configured for blood delivery and a second independent lumen configured for blood withdrawal from the patient, at least a portion of the catheter having an outer diameter configured for insertion through the subcutaneous tissue tunnel, one of the lumens of the catheter configured to receive the guidewire for over the wire insertion of the dialysis catheter through the tissue tunnel when the trocar is removed.

27. The system of claim 26, further comprising an elongated opening formed in the trocar communicating with the lumen of the trocar for insertion of the guidewire.

28. A hemodialysis catheter for delivering and withdrawing blood from a patient's body, the catheter comprising:

a catheter body having an outer wall, a distal portion, a central lumen extending from a proximal portion of the catheter body to the distal portion and configured to receive a guidewire therein and to allow blood passage therethrough, at least three longitudinally extending lumens independent of the central lumen, the at least three lumens radially displaced with respect to the central lumen;

at least three openings in the outer wall of the catheter body, each opening being in fluid communication with one of the at least three longitudinally extending lumens;